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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/524,964	09/26/2005	Christoph Brabec	15626-037US1 SA-05US	3573

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EXAMINER	
COLEMAN, WILLIAM D	
ART UNIT	PAPER NUMBER
2823	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/14/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/524,964	BRABEC ET AL.	
	Examiner	Art Unit	
	W. David Coleman	2823	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 January 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7,9-12 and 14-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7 and 9-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claim 1-7, 9-12 and 14-22 are rejected under 35 U.S.C. 103(a) as being obvious over Camaioni et al., "Solar Cells based on poly(3-alkyl)thiophenes and [60]fullerene; a comparative study, Journal of Materials Chemistry, The Royal Society of Chemistry, 2002, pp. 2065-2070 in view of Brabec et al., "The Influence of Ordering on the Photoinduced Charge Transfer in Composites of Phenyl-type Substituted Polythiophenes with Methanofullerenes", 1999 Material Research Proceedings Symposium BB, MRS Fall Symposium 1999.

The applied reference has a common Inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the

application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(l)(1) and § 706.02(l)(2). It is obvious that a range of temperatures can be used in the method of treating a photovoltaically active layer.

Camaioni discloses a semiconductor process substantially as claimed.

1. Pertaining to claim 1, Camaioni teaches a method for treating a photovoltaically active layer that includes a polymer and a fullerene. However, Camaioni fails to teach the method comprising heating the photovoltaically active layer to a temperature of at least 70°C. Brabec teaches heating the photovoltaically active layer to a temperature of 150oC. In view of Brabec, it would have been obvious to one of ordinary skill in the art to claim a temperature at least 70oC or higher because the research disclosed by Brabec indicates that that heat treatment results in a red shift of the absorption maximum due to solvent or heat induced ordering (see Abstract).

2. Pertaining to claim 2, Camaioni in view of Brabec teaches the method as defined in claim 1, wherein the fullerene comprises a methanofullerene.

3. Pertaining to claim 3, Camaioni in view of Brabec teaches the method as defined in either of claims claim 1 and, wherein the photovoltaically active layer is exposed to a solvent vapor

(because the fullerene material and the organic semiconductor material are in solution form and the fullerene which is in solution form in toluene, Camaioni meets the claim limitations).

4. Pertaining to claim 4, Camaioni in view of Brabec teaches the method as defined in claim 3, wherein the photovoltaically active layer is exposed to the solvent vapor at room temperature (Camaioni discloses fabricating photovoltaic cells at ambient room temperature and giving them a mild heat treatment, see Abstract).

5. Pertaining to claim 5, Camaioni in view of Brabec teaches the method as defined in claim 3, wherein the photovoltaically active layer is exposed to the solvent vapor for no longer than one minute (the Examiner takes the position that since Camaioni is attaching a fullerene to the organic semiconductor material and heating the final product to about 55°C for 30 minutes).

6. Pertaining to claim 6, Camaioni in view of Brabec teaches the method as defined in claim 3, wherein the solvent comprises a solvent selected from the group consisting of xylene, toluene, butanone and/or chloroform and/or a further solvent and/or an arbitrary mixture of said solvents at least partially etches or softens said polyalkylthiophene (because Camaioni teaches forming photovoltaic cells incorporating poly(3-alkyl)thiophenes and fullerenes in a toluene process, it is inherent that the toluene in the Camaioni semiconductor process softens the said polyalkylthiophene material).

7. Pertaining to claim 9, Camaioni in view of Brabec teaches a method of treating a photovoltaically active layer that includes a polymer and a fullerene, the method, comprising: contacting the photovoltaically active layer with solvent vapor (please see the rejection of claim 1 above for explanation of the present claim rejection).

8. Pertaining to claim 10, Camaioni in view of Brabec teaches the method as defined in claim 9, wherein the polymer comprises a polyalkylthiophene, and the fullerene is mixed with the polyalkylthiophene (please see the rejection of claims 1 and 9).

9. Pertaining to claim 11, Camaioni in view of Brabec teaches the method of claim 10, wherein the fullerene comprises a methanofullerene.

10. Pertaining to claim 12, Camaioni in view of Brabec teaches the method of claim 9, wherein the photovoltaically active layer contacts the solvent vapor at room temperature.

11. Pertaining to claim 15 Camaioni in view of Brabec teaches the method of claim 9, wherein the solvent comprises at least one solvent selected from the group consisting of xylene, toluene, butanone, and chloroform (this claim has been addressed above).

12. Pertaining to claim 16, Camaioni in view of Brabec teaches the method of claim 9, wherein the solvent at least partially etches or softens the polyalkylthiophene (this limitation has been addressed above).

13. Pertaining to claim 17, Camaioni in view of Brabec teaches the method of claim 9, further comprising annealing the photovoltaically active layer(this is inherently done to remove the solvent from the photovoltaic film).

14. Pertaining to claims 19, 21 and 22, Camaioni in view of Brabec teaches wherein treating the photovoltaically active layer has an absorption maximum in the deep red region.

15. Pertaining to claims 7, 18 and 20, Camaioni in view of Brabec to teach the method of claims 1 and 17, wherein the photovoltaically active layer is heated to a temperature of at least 80°C. However, Camaioni fails to teach the method comprising heating the photovoltaically active layer to a temperature of at least 70°C. Brabec teaches heating the photovoltaically active layer to a temperature of 150oC. In view of Brabec, it would have been obvious to one of ordinary skill in the art to claim a temperature at least 70oC or higher because the research disclosed by Brabec indicates that that heat treatment results in a red shift of the absorption maximum due to solvent or heat induced ordering (see Abstract).

Pertaining to claim7, and 14, the combined teachings fail to disclose the method of claim 11,wherein the photovoltaically active layer contacts the solvent vapor for no longer than one minute. Given the teaching of the references, it would have been obvious to determine the optimum thickness, temperature as well as condition of delivery of the layers involved. See *In re Aller, Lacey and Hall* (10 USPQ 233-237) "It is not inventive to discover optimum or workable ranges by routine experimentation. Note that the specification contains no disclosure of either the critical nature of the claimed ranges or any unexpected results arising therefrom. Where

patentability is said to be based upon particular chosen dimensions or upon another variable recited in a claim, the Applicant must show that the chosen dimensions are critical. *In re Woodruff*, 919 f.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

Any differences in the claimed invention and the prior art may be expected to result in some differences in properties. The issue is whether the properties differ to such an extent that the difference is really unexpected. *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986)

Appellants have the burden of explaining the data in any declaration they proffer as evidence of non-obviousness. *Ex parte Ishizaka*, 24 USPQ2d 1621, 1624 (Bd. Pat. App. & Inter. 1992).

An Affidavit or declaration under 37 CFR 1.132 must compare the claimed subject matter with the closest prior art to be effective to rebut a prima facie case of obviousness. *In re Burckel*, 592 F.2d 1175, 201 USPQ 67 (CCPA 1979).

Conclusion

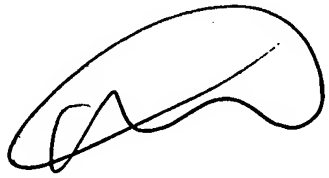
Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to W. David Coleman whose telephone number is 571-272-1856. The examiner can normally be reached on Monday-Friday 9:00 AM - 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matt Smith can be reached on 571-272-1907. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



W. David Coleman
Primary Examiner
Art Unit 2823

WDC